CLAIMS

1. An isolated and purified human occludin polypeptide having at least about 60% sequence homology with SEQ ID NO: 2.

2. A polypeptide according to claim 1 which has at least about 80% sequence homology to SEQ ID NO: 2.

3. A polypeptide according to claim 2 which has at least about 90% sequence homology to SEQ ID NO: 2.

4. A method for screening for the presence or absence of occludin inhibition comprising:

(a) adding the occludin polypeptide according to claim 1, or a fragment or variant thereof, to an *in vitro* culture of epithelial or endothelial cells;

(b) observing the culture for a change in adhesion, a decrease in electrical resistance, or an increase in transmonolayer tracer flux, or a combination of any of these properties;

(c) comparing the culture with a control culture to which no polypeptide or fragment or variant has been added; and

(e) determining the presence of inhibition by observing at least about a 20% decrease in adhesion, at least about a 20% decrease in electrical resistance, or at least about a 20% increase in transmonolayer tracer flux.

5. A method according to claim 4 wherein at least about a 50% decrease in adhesion is observed.

6. A method according to claim 4 wherein at least about a 50% decrease in electrical resistance is observed.

7. A method according to claim 4 wherein at least about a 50% increase in trans-monolayer tracer flux is observed.

8. A peptide having at least about 60% sequence homology to residues 90 to 138 of SEQ ID NO:2.

9. A peptide according to claim 8 having at least about 80% sequence homology to residues 90 to 138 of SEQ ID NO: 2.

10. A peptide according to claim 8 having at least about a 90% sequence homology to residues 90 to 138 of SEQ ID NO: 2.

11. A method for screening for the presence or absence of occludin inhibition comprising:

(a) adding the occludin peptide according to claim 8, or a fragment or variant thereof, to an *in vitro* culture of epithelial or endothelial cells;

(b) observing the culture for a change in adhesion, a decrease in electrical resistance, or an increase in transmonolayer tracer flux, or a combination of any of these properties;

(c) comparing the culture with a control culture to which no polypeptide or fragment or variant has been added; and

(e) determining the presence of inhibition by observing at least about a 20% decrease in adhesion, at least about a 20% decrease in electrical resistance, or at least about a 20% increase in transmonolayer tracer flux.

12. A method according to claim 11 wherein at least about a 50% decrease in adhesion is observed.

13. A method according to claim 11 wherein at least about a 50% decrease in electrical resistance is observed.

14. A method according to claim 11 wherein at least about a 50% increase in trans-monolayer tracer flux is observed.

15. A peptide having at least about 60% sequence homology to residues 196 to 246 of SEQ ID NO: 2.

16. A peptide according to claim 15 having at least about 80% sequence homology to residues 196 to 246 of SEQ ID NO: 2.

17. A method for screening for the presence or absence of occludin inhibition comprising:

(a) adding the occludin peptide according to claim 15, or a fragment or variant thereof, to an *in vitro* culture of epithelial or endothelial cells;

(b) observing the culture for a change in adhesion, a decrease in electrical resistance, or an increase in transmonolayer tracer flux, or a combination of any of these properties;

(c) comparing the culture with a control culture to which no polypeptide or fragment or variant has been added; and

(e) determining the presence of inhibition by observing at least about a 20% decrease in adhesion, at least about a 20% decrease in electrical resistance, or at least about a 20% increase in transmonolayer tracer flux.

18. A method according to claim 17 wherein at least about a 50% decrease in adhesion is observed.

19. A method according to claim 17 wherein at least about a 50% decrease in electrical resistance is observed.

20. A method according to claim 17 wherein at least about a 50% increase in trans-monolayer tracer flux is observed.